

# *S&MA Involvement by Mission Phase*



## **NASA ELV PAYLOAD SAFETY & MISSION SUCCESS CONFERENCE**

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# S&MA Involvement – Processing



- NASA missions
  - SELVS
  - MELVS
- NASA facilities
  - KSC - FL
  - KSC - VAFB

# NASA SELVS



## VAFB – ORBITAL SCIENCES CORP

### – MISSION ASSURANCE

- OVERSIGHT OF QUALITY ISSUES
- ASSURANCE OF FLIGHT READINESS

### – SAFETY

- INSIGHT OF SAFETY ISSUES
- 30<sup>th</sup> SPACE WING AUTHORITY FOR SAFETY



# NASA MELVS



## VAFB

- THE BOEING COMPANY
  - LOCKHEED MARTIN
- MISSION ASSURANCE
  - OVERSIGHT
- SAFETY
  - OVERSIGHT/RESOURCE PROTECTION

# OCCUPATIONAL SAFETY & HEALTH



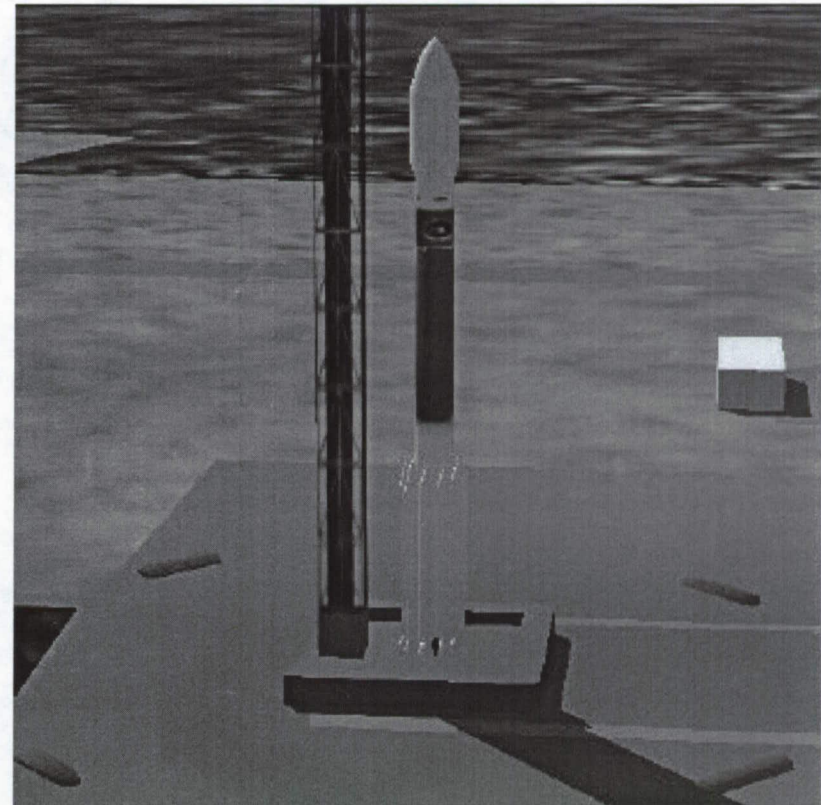
- Flight hardware
  - Design & operational specifications
  - Documentation for integration
- Hazards and risk evaluation
  - Surveillance
  - Inspection



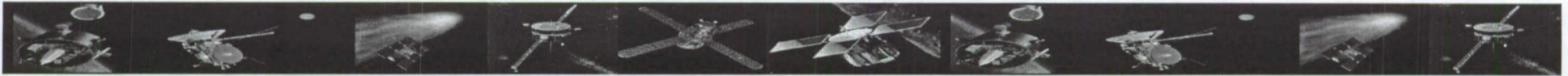
# FLIGHT HARDWARE



- Spacecraft
- First, inter, and second stages
- Solid Rocket Motors (SRMs)
- Payload fairing



# HAZARD & RISK EVALUATION



- Surveillance
  - Hazardous operations
  - Probability versus Severity
- Inspections
  - Personal Protective Equipment
  - Programs
  - Documentation

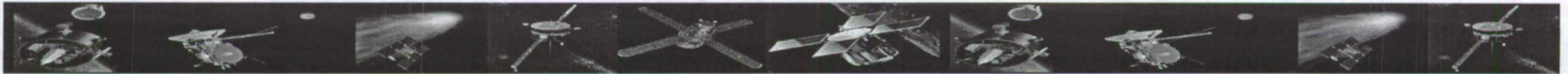
# SPACECRAFT



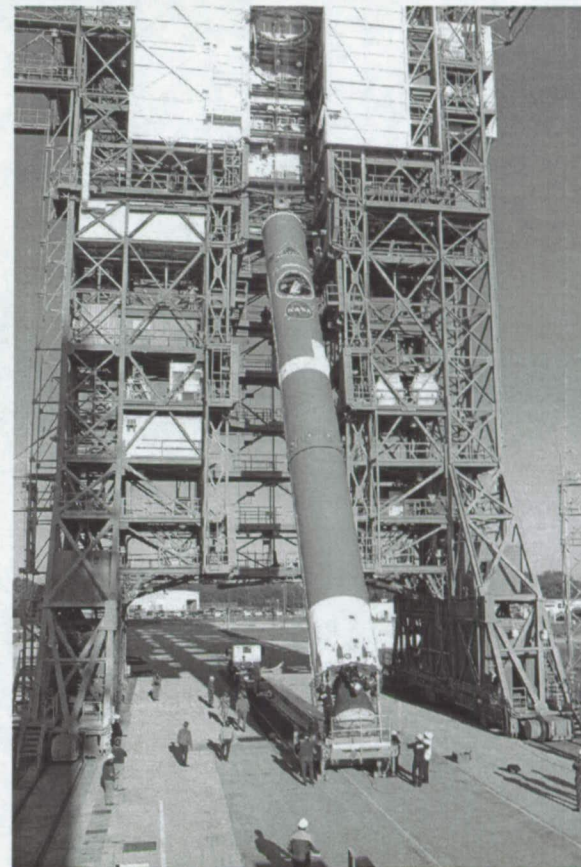
- Hoisting
- Ordnance
- Fueling
- Pressurization
- Transport
- Integrate



# FIRST STAGE



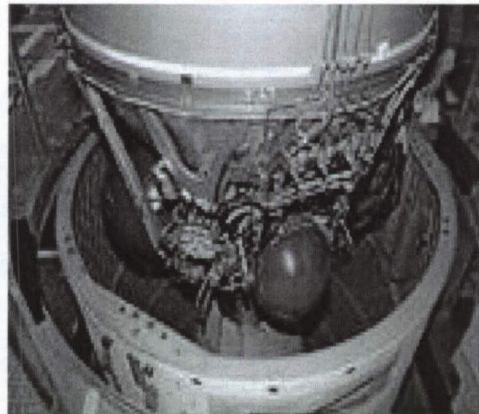
- Hoisting
- Transport
- Ordnance
- Pressurization
- Integrate
- Fueling



# INTERSTAGE



- Hoisting
- Ordnance
- Transport
- Integrate





# SECOND STAGE

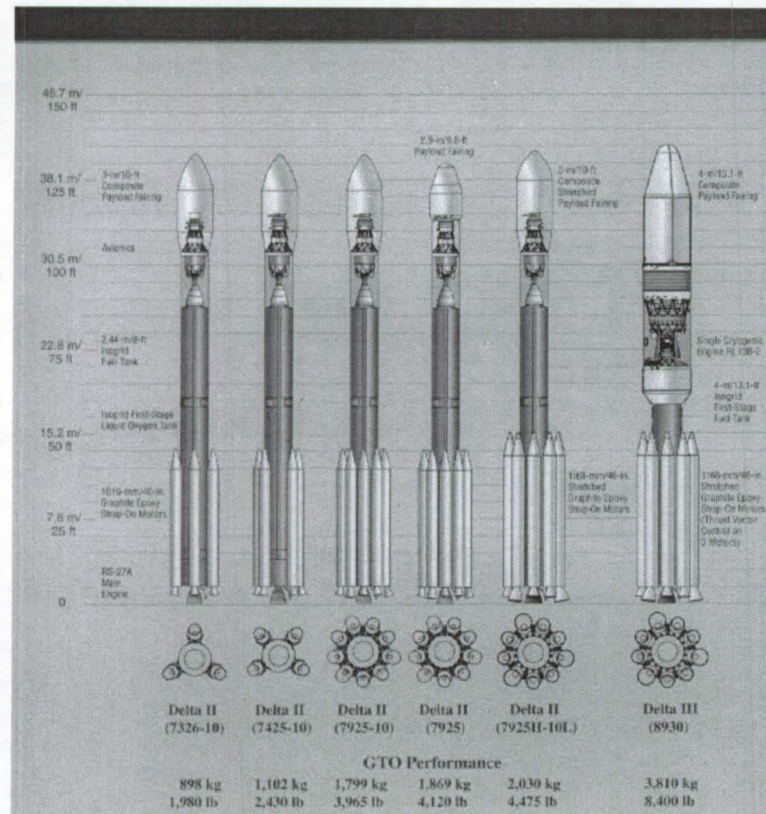


- Hoisting
- Transport
- Pressurization
- Ordnance
- Integrate
- Fueling



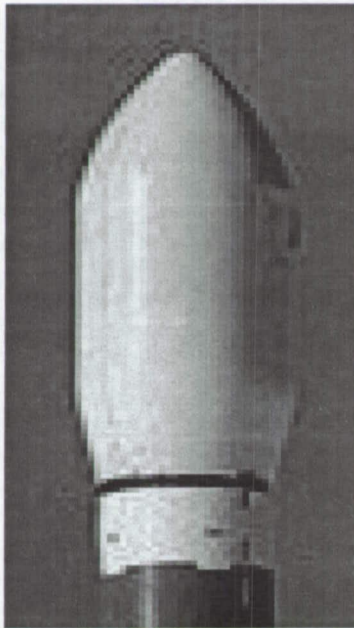


# SOLID ROCKET MOTORS

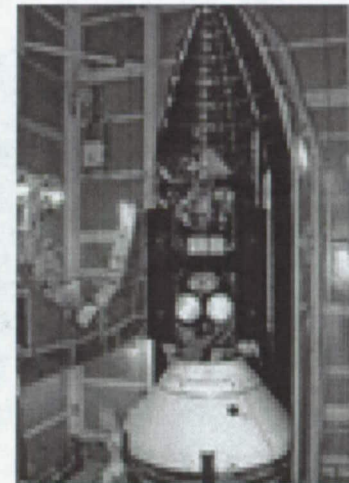


- Hoisting
- Pressurization
- Ordnance
- Transport
- Integrate

# PAYLOAD FAIRING

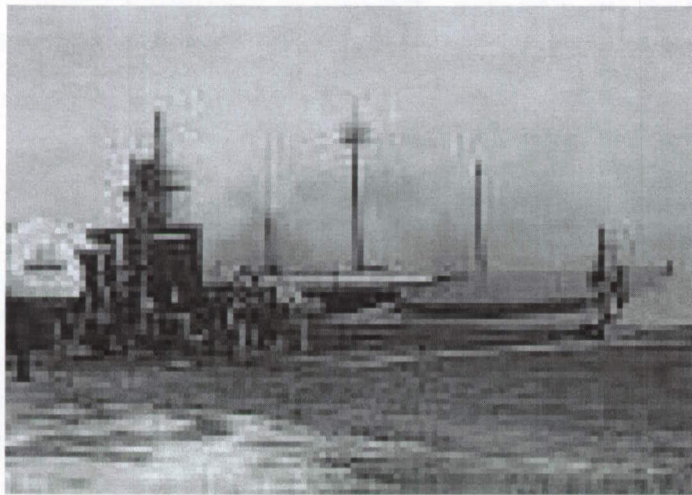
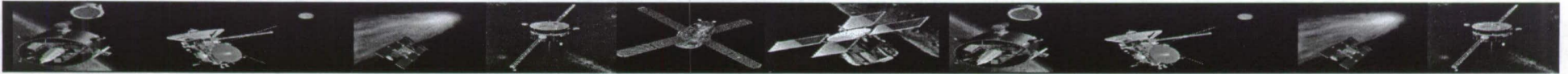


- Hoisting
- Ordnance
- Cleanliness
- Transport
- Integrate





# PROPULSION



- Pressurization
- Propellants
  - Liquid
  - Solid
- Cryogenics
- Integrate



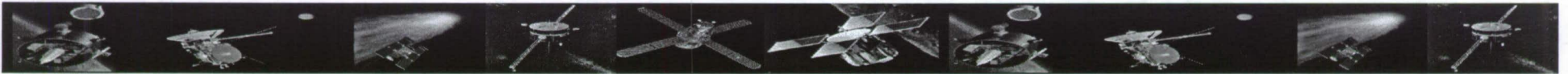
# MECHANICAL



- Hoisting
- Transport
- Ordnance
- Integrate

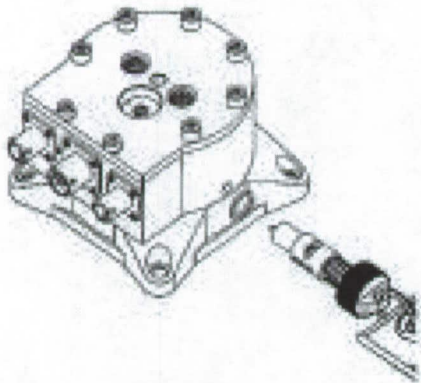


# ELECTRICAL & FACILITIES



## Electrical

- Ordnance
- Integrate



## Facilities

- Ground Support Equipment
  - Vapor Detection System
  - Breathing Air
- Cranes
- Integrate



# ACCIDENTS



## Mishaps

- Investigate any incident or accident in assigned areas
- Determine cause
- Implement safety measures/recommendations as required



# INSTITUTIONAL SAFETY

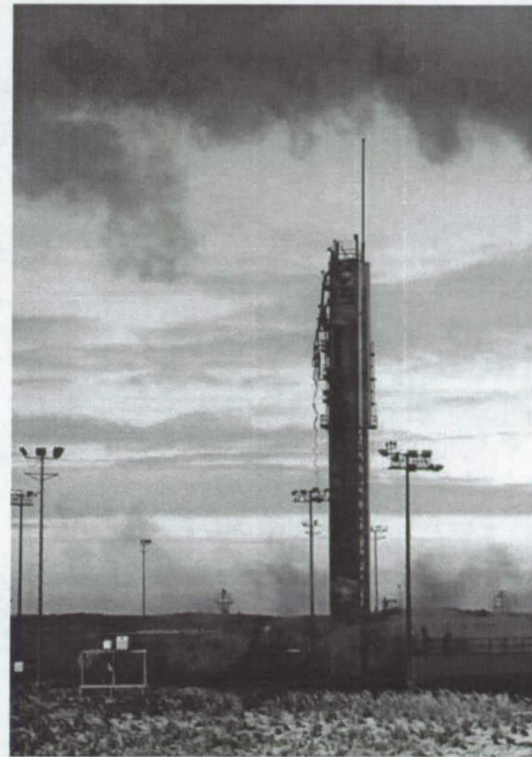


- NASA facilities
- Space Launch Complex 2
  - Safety control authority inside the security fence line
  - Each facility gets inspected at least once annually
  - Responsible for discrepancies
  - Review design modifications/plans

# INSTITUTIONAL SAFETY



- Fire suppression
- Ordnance
- Cranes
- Confined space
- Seismic



# INSTITUTIONAL SAFETY



- Variances
- Voluntary Protection Program
- OSHA Log
- Government Industry Data Exchange Program (GIDEP)